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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Jonathan J. Halls

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EXAMINER

MURATA, AUSTIN

ART UNIT

PAPER NUMBER

1712

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/579,050	Applicant(s) HALLS ET AL.	
	Examiner AUSTIN MURATA	Art Unit 1712	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 May 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) 21 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 and 22-29 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>5/9/2006</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This action is nonfinal.

Claims 1-29 are pending.

Election/Restrictions

Restriction is required under 35 U.S.C. 121 and 372.

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1.

In accordance with 37 CFR 1.499, applicant is required, in reply to this action, to elect a single invention to which the claims must be restricted.

Group I, claim(s) 1-20 and 22-29, drawn to a coating method for an EL device.

Group II, claim(s) 21, drawn to an EL device.

The groups of inventions listed above do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons:

The common technical feature connecting the product and the method of making is the method of making the product. In this case the method of making the product is found in claim 1. Common technical feature of claim 1 is known in the prior art (see the rejection below) and is therefore not a special technical feature.

During a telephone conversation with MR. ANDREW LAWRENCE on 6/14/2010 a provisional election was made WITH traverse to prosecute the invention of GROUP I, claims 1-20 and 22-29. Affirmation of this election must be made by applicant in

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replying to this Office action. Claim 21 withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

The examiner has required restriction between product and process claims. Where applicant elects claims directed to the product, and the product claims are subsequently found allowable, withdrawn process claims that depend from or otherwise require all the limitations of the allowable product claim will be considered for rejoinder. All claims directed to a nonelected process invention must require all the limitations of an allowable product claim for that process invention to be rejoined.

In the event of rejoinder, the requirement for restriction between the product claims and the rejoined process claims will be withdrawn, and the rejoined process claims will be fully examined for patentability in accordance with 37 CFR 1.104. Thus, to be allowable, the rejoined claims must meet all criteria for patentability including the requirements of 35 U.S.C. 101, 102, 103 and 112. Until all claims to the elected product are found allowable, an otherwise proper restriction requirement between product claims and process claims may be maintained. Withdrawn process claims that are not commensurate in scope with an allowable product claim will not be rejoined. See MPEP § 821.04(b). Additionally, in order to retain the right to rejoinder in accordance with the

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above policy, applicant is advised that the process claims should be amended during prosecution to require the limitations of the product claims. **Failure to do so may result in a loss of the right to rejoinder.** Further, note that the prohibition against double patenting rejections of 35 U.S.C. 121 does not apply where the restriction requirement is withdrawn by the examiner before the patent issues. See MPEP § 804.01.

Priority

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-14, 16-18, 20 and 22-25 are rejected under 35 U.S.C. 102(b) as being anticipated by BURROUGHES (WO 99/48160).

Regarding claim 1,

BURROUGHES teaches an electroluminescent (EL) device that has a positive charge carrier injecting layer, a negative charge carrier injecting layer, and a light-emissive layer located between, that can also be positive or negative charge acceptors (material for transporting charge carriers) **page 5 line 7-17** and a semiconductor **page 7 lines 21-22**. More specifically, the reference teaches on **page 10 paragraph 3** a structure that includes a hole transport layer (first material for transporting charge

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carriers) followed by a light-emissive layer, followed by an electron transport layer (second material for transporting charge carriers) sandwiched between electrodes (cathode and anode). The reference teaches on **page 10 paragraph 2** that an electron transporting material can be F8 which is also light emitting (second material is also light emitting).

Regarding claim 2,

BURROUGHES teaches on **page 2 middle paragraph** referring to **figure 1a** the first layer is an anode and the layer on the opposite side is the cathode. The first layer is positive charge carriers (holes) and the second injection layer has negative charge carriers (electrons).

Regarding claim 3,

BURROUGHES teaches on **page 10 line 3** the components of the EL layer are polymer.

Regarding claim 4 and 5,

BURROUGHES teaches on **page 10** and **figure 3** the polymer structures for one of the three materials (first material) in the EL layer as TFB. Specifically TFB from **figure 3** shows a repeat unit where the Ar pieces would be substituted substituted for aryl (phenyl) groups.

Regarding claim 6,

The structures in **figures 3 (page 10)** show a functional group (R) from the phenyl group below the nitrogen.

Regarding claim 7,

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The structures of the repeat units in **figure 3 (page 10)** for TFMO and TFB both have only one nitrogen atom.

Regarding claims 8-10,

BURROUGHES teaches that another of the three materials (second material) is PFM shown in **figure 3 (page 10)**. The structure shows the Ar parts substituted for aryl groups. The structure shows each of the Ar as a phenyl group.

Regarding claim 11, 12 and 13

BURROUGHES teaches that it is known to deposit the hole transporting layer first (fabrication from anode to cathode) but also teaches that the first component deposited could be the negative electron transporting material **page 14 paragraph 3** (fabrication from cathode to anode) again using F8 shown in **figure 3** as the light emitting and electron transporting material.

Regarding claims 14 and 25,

Table 1 on page 17 shows the emission color of the repeat units of **figure 3** being blue (475nm area of the spectrum).

Regarding claim 16-18,

BURROUGHES teaches in the **paragraph 2 on page 7** that the components of the light emissive layer are all soluble in the same solvent mixture for convenient co-deposition. The solvent used is xylene **paragraph 3 on page 28** (comprises poly-alkylated benzene).

Regarding claim 20,

BURROUGHES teaches the components of the light-emissive layer are phase separated, see **paragraph 5 on page 5**

Regarding claim 22,

BURROUGHES teaches the polymers can be partially conjugated, **paragraph 7 on page 12**.

Regarding claim 23 and 24,

BURROUGHES teaches on **page 10** using poly(2,7-(9,9-di-n-octylfluorene)) (a 9,9-disubstituted fluorine-2,7-diyl) which is F8 in **figure 3**.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 15, 19, and 26-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over BURROUGHES (WO 99/48160).

Regarding claims 15 and 26,

BURROUGHES teaches the materials of claim 1 **page 10** and teaches mixing them together **paragraph 2 page 7**. The reference does not teach using the particular material ratio claimed. However, **page 22** and **table 3** shows an efficiency change with varying ratios of material. At the time of the invention it would have been prima facie obvious to one of ordinary skill in the art to optimize the efficiency of the EL layer by changing the ratio of materials used (result effective variable). Therefore any ratio of material would raise a case of prima facie obviousness MPEP 2144.05 II.

Regarding claims 19 and 27-29,

BURROUGHES teaches that molecular weight is relevant for phase separation **Page 30 paragraph 2** but is silent to the molecular weights used. However, as a result effective variable, changing the molecular weight to different ranges is considered an optimization 2144.05 II and is not patentably distinct. At the time of the invention it would have been prima facie obvious to optimize the peak molecular weight of the material for the best phase separation.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to AUSTIN MURATA whose telephone number is (571)270-5596. The examiner can normally be reached on Monday through Friday 9:00-5:30.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, MICHAEL CLEVELAND can be reached on (571)272-1418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/AUSTIN MURATA/
Examiner, Art Unit 1712

/Michael Cleveland/

Supervisory Patent Examiner, Art Unit 1712